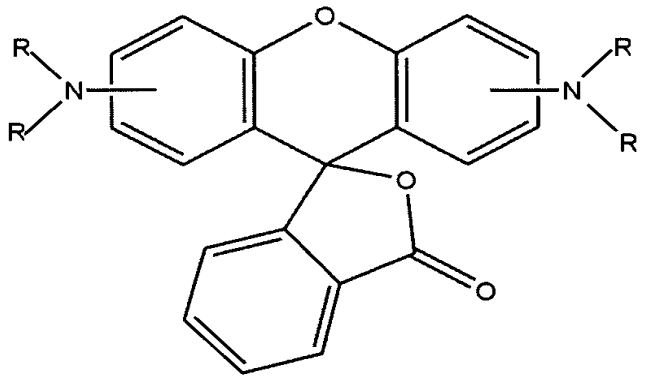
CLAIMS

What is claimed is:

1. An imaging compound comprising:
a matrix having an antenna and an activator; and
an alloy dispersed in said matrix as an independent phase, said alloy having an antenna and further having a leuco-dye and an accelerator uniformly distributed in the alloy.

2. The compound of claim 1, wherein the antenna of the matrix and the antenna of the alloy are different compounds.

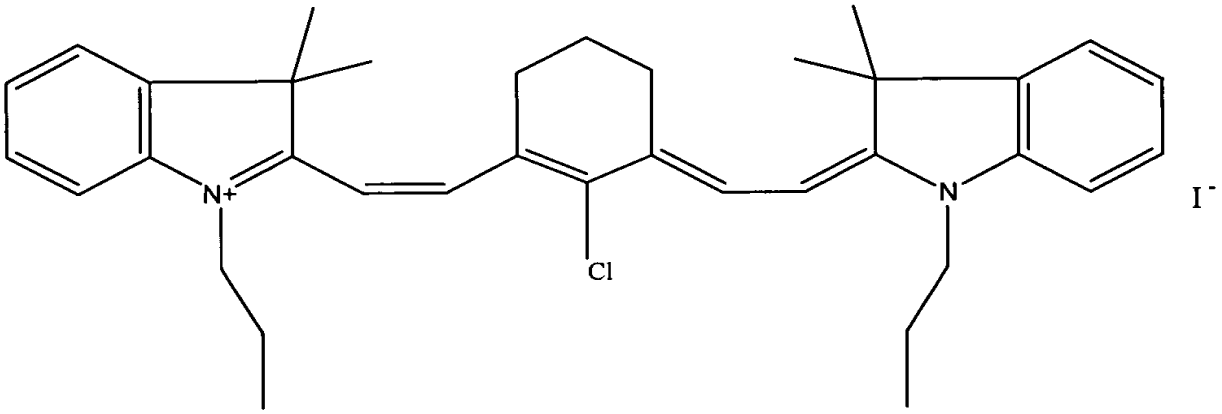
3. The compound of claim 1, wherein the leuco-dye comprises the following structure:

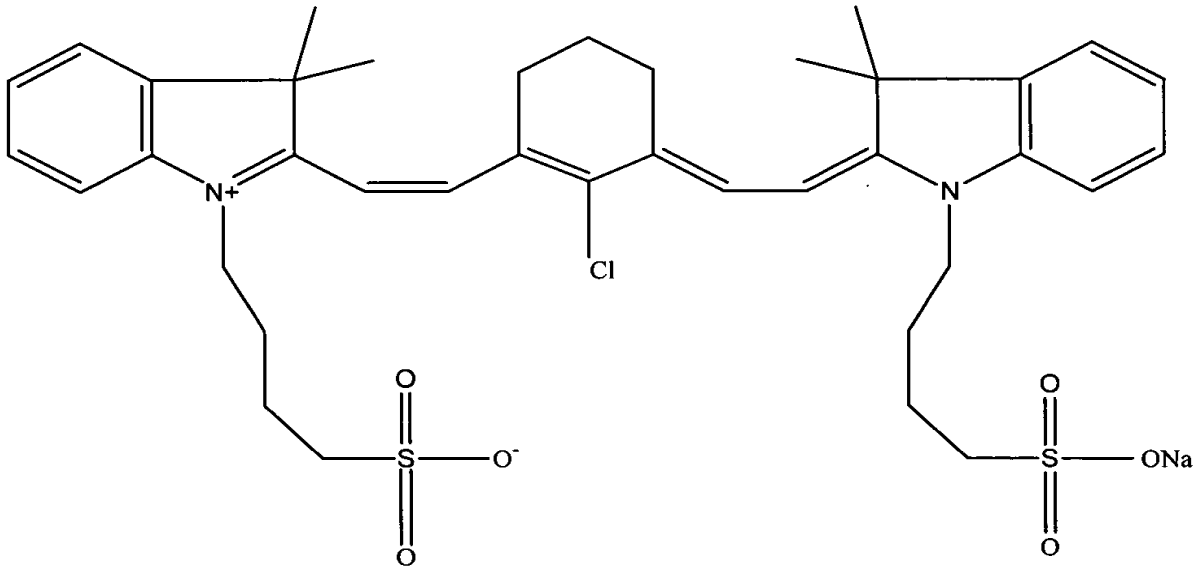


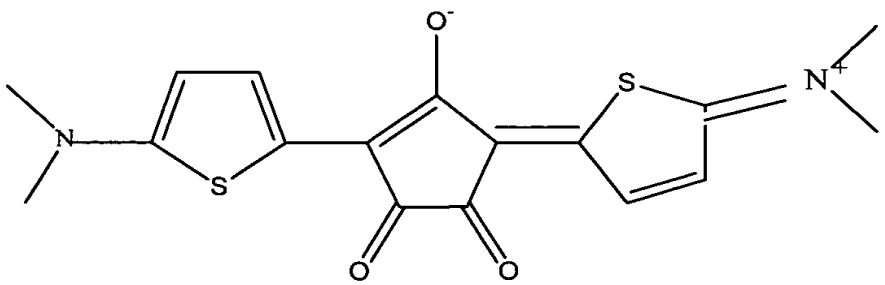
where R could be an alkyl group, an aryl group, or H atoms.

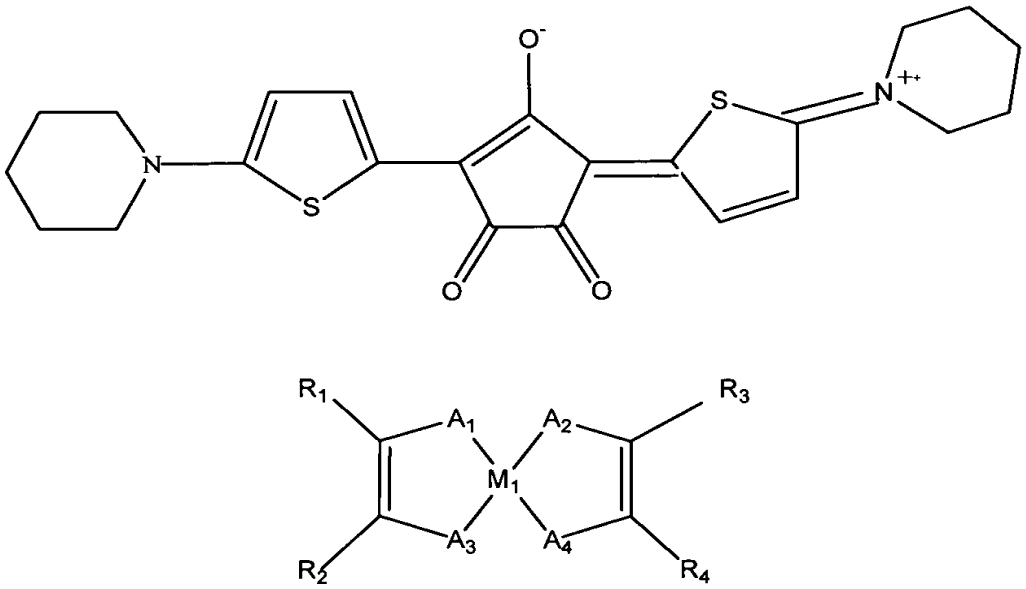
4. The compound of claim 1, wherein the activator comprises a phenolic compound.

5. The compound of claim 1, wherein the antenna comprises at least one of the compounds selected from the group consisting of quinone, phthalocyanine, naphthalocyanine, metal complexes, azo, croconium, squarilium dyes, hexafunctional polyester oligomers, and the compounds represented by the following formula:

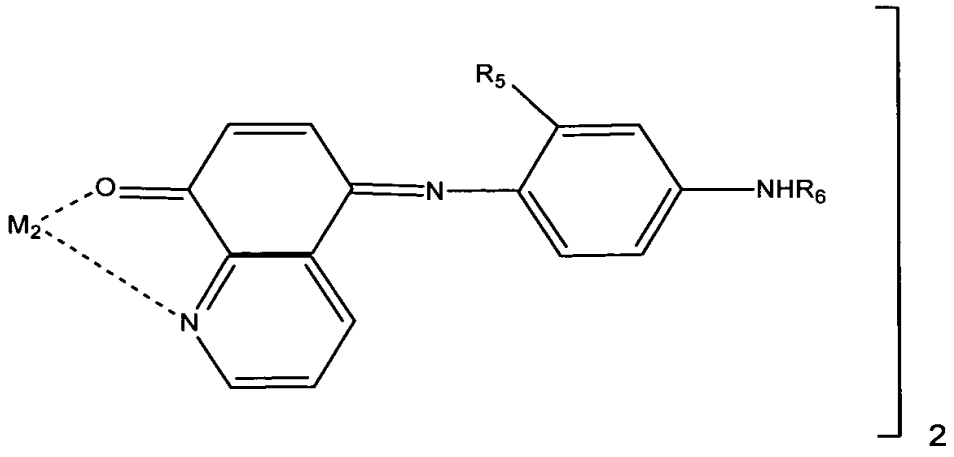








where M_1 is a transition metal, R_1, R_2, R_3, and R_4 are alkyl or aryl groups with or without halo substituents, and A_1, A_2, A_3, and A_4 can be S, NH, or Se; and



where M_2 is Ni or Cu and R_5 and R_6 are aryl or alkyl groups with or without halo substituents.

6. The compound of claim 1, wherein the antenna is designed to absorb laser radiation.

7. The compound of claim 1, wherein the antenna is tuned to absorb infrared radiation.

8. The compound of claim 1, wherein the matrix comprises an ultraviolet-curable compound.

9. A method for preparing an imaging material, the method comprising:
providing a powder having an activator and an antenna;
dissolving the activator/antenna powder to form an activator/matrix pre-polymer solution;
providing a leuco-dye alloy;
dispersing the leuco-dye alloy into the activator/matrix pre-polymer solution to form a radiation-curable paste.

10. The method of claim 9, further comprising applying the radiation-curable paste on a substrate.

11. The method of claim 9, wherein providing an activator/antenna powder comprises:
melting an activator;
dissolving an antenna in the activator to form an activator/antenna melt;
cooling the activator/antenna melt to ambient temperature; and
grinding the cooled activator/antenna melt to a powder.

12. The method of claim 11, wherein the cooled activator/antenna powder comprises particle sizes below 50 μm.

13. The method of claim 9, wherein providing a leuco-dye alloy comprises:

providing a melted accelerator;

dissolving antenna into the melted accelerator;

dissolving leuco-dye into the melted accelerator;

cooling the leuco-dye/antenna/accelerator melt to a solid state; and

grinding the cooled leuco-dye/antenna/accelerator melt to a powder.

14. The method of claim 13, wherein the cooled leuco-dye/antenna/accelerator powder comprises particle sizes below 20 μm.

15. An image-recording medium comprising:

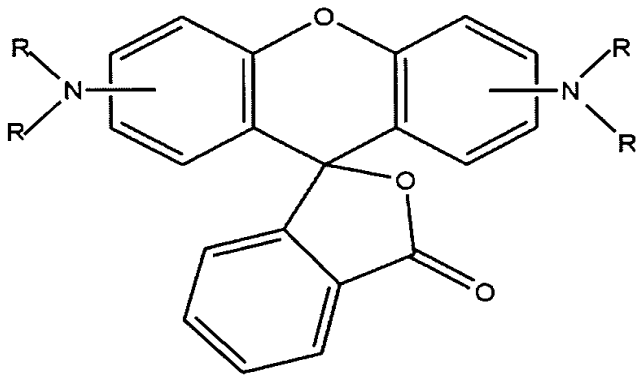
a substrate;

a matrix on the substrate, the matrix having an antenna and an activator; and

an alloy dispersed in the matrix as an independent phase, the alloy having an antenna and further having a leuco-dye and an accelerator distributed in the alloy.

16. The medium of claim 15, wherein the antenna of the matrix and the antenna of the alloy are different.

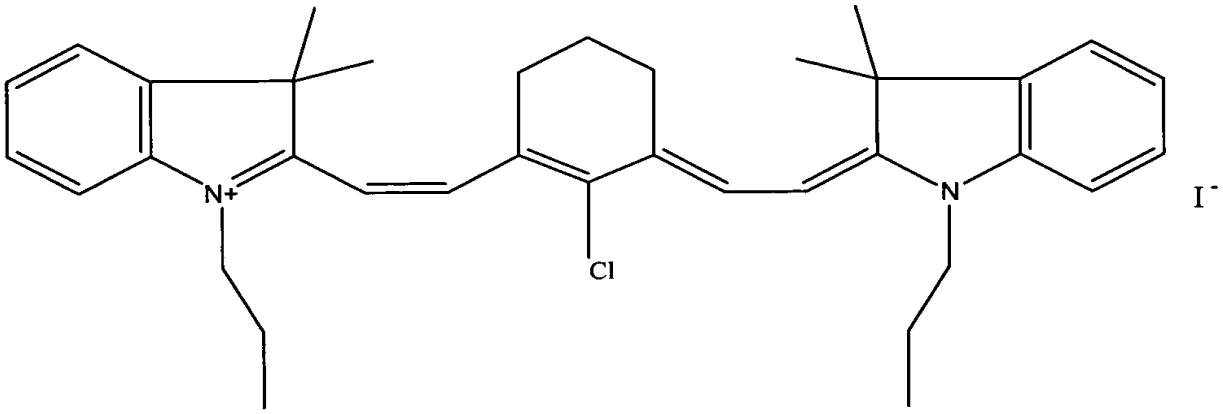
17. The medium of claim 15, wherein the leuco-dye comprises the following structure:

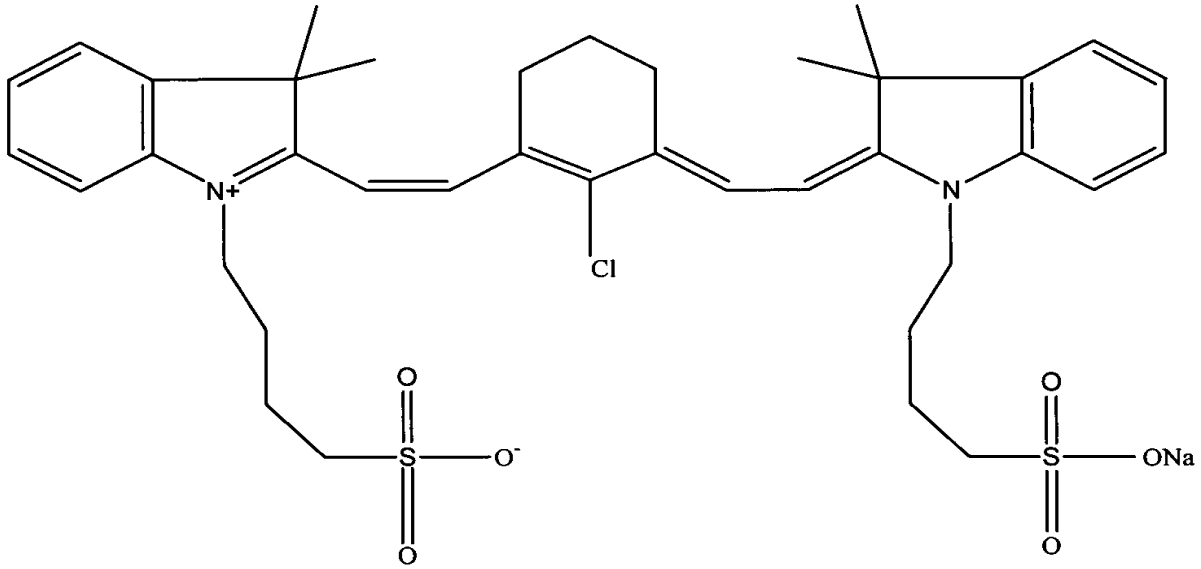


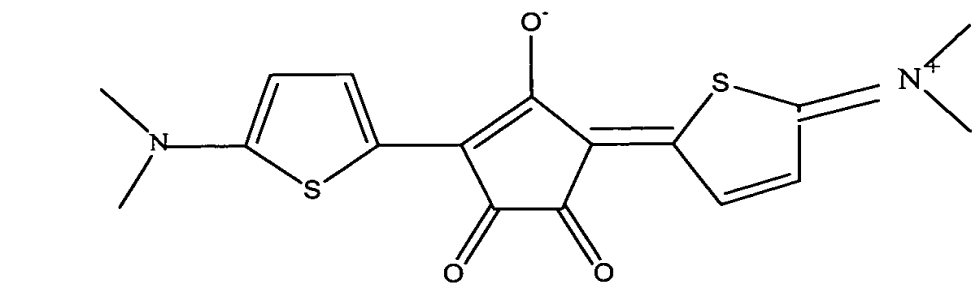
where R could be alkyl or aryl groups or H atoms.

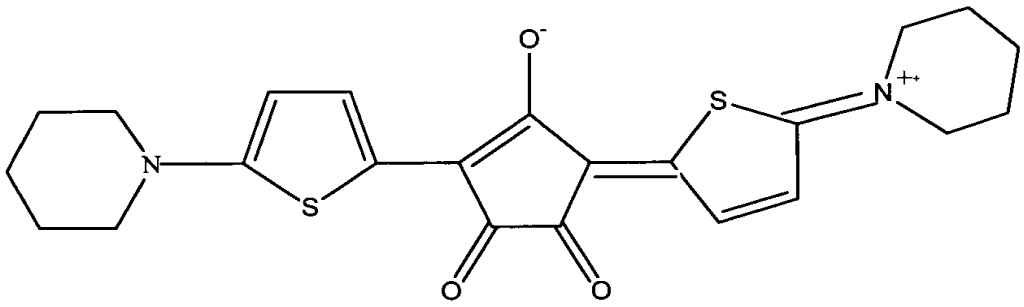
18. The medium of claim 15, wherein the activator comprises a phenolic compound.

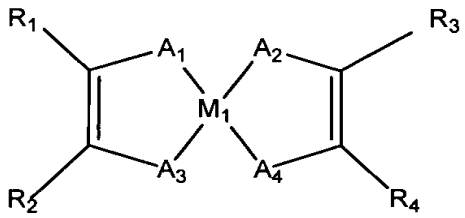
19. The medium of claim 15, wherein the antenna comprises at least one of the compounds selected from the group consisting of quinone, phthalocyanine, naphthalocyanine, metal complexes, azo, croconium, squarilium dyes, hexafunctional polyester oligomers, and the compounds represented by the following formula:



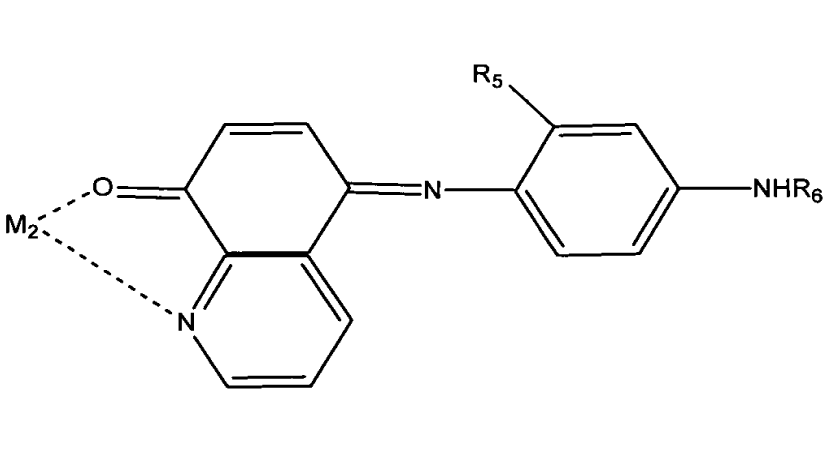








where M_1 is a transition metal, R_1, R_2, R_3, and R_4 are alkyl or aryl groups with or without halo substituents, and A_1, A_2, A_3, and A_4 can be S, NH, or Se; and



where M_2 is Ni or Cu and R_5 and R_6 are aryl or alkyl groups with or without halo substituents.

20. The medium of claim 15, wherein the antenna is designed to absorb laser radiation.

21. The medium of claim 15, wherein the antenna is tuned to absorb infrared radiation.

22. The medium of claim 15, wherein the matrix comprises an ultraviolet-curable compound.